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THIRTY-SECOND ANNUAL REPORT

OF THE

SOUTH CAROLINA

STATE BOARD OF
FISHERIES

YEAR ENDING JUNE 30, 1938

TO THE

GOVERNOR AND
GENERAL ASSEMBLY



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1938

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JOINT COMMITTEE ON PRINTING
GENERAL ASSEMBLY OF SOUTH CAROLINA

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PERSONNEL

John H. Graham, Chairman, McClellanville, S. C.
C. L. Young, Georgetown, S. C.
W. B. Ryan, Jr., M. D., Beaufort, S. C.
Thomas C. Hartnett, Secretary and Bookkeeper, Charleston,
S. C. Office: 403 Peoples Office Building, Charleston, S. C.

INSPECTORS

Chief Inspector: Alonzo B. Seabrook, North Charleston, S. C.
District No. 1: J. Geo. Bailey, Ridgeland, S. C.
District No. 2: W. A. Tuten, Walterboro, S. C.
District No. 3: E. M. Bailey, Edisto Island, S. C.
District No. 4: J. F. Bellune, Georgetown, S. C.
District No. 5: L. F. Bryan, Conway, S. C.
District No. 6: S. C. Taylor, Ridgeland, S. C.
District No. 7: J. Leroy Butler, Jr., Beaufort, S. C.

REPORT

To His Excellency, the Governor, and the Honorable General Assembly of the State of South Carolina, Session 1939:

The State Board of Fisheries respectfully submits herewith, its thirty-second Annual Report.

The State Board of Fisheries is that part of the State government which is charged with responsibility for the supervision and conservation of all salt water fish and shellfish along the South Carolina seacoast, from the Savannah River on the south to the North Carolina line on the north. It is concerned with the activities and welfare of the commercial fishery and fishery industries. The duties of the Board include the enforcing of all laws dealing with the catching, marketing and shipping of tidal water products, mainly oysters, clams, crabs, terrapin, shrimp, shad, sturgeon, menhaden and all other salt water fish. Also, the enforcement of open and closed seasons, impost tax laws on coastal fisheries products and all other measures pertaining to the conservation of fish and shellfish in the coastal waters, as well as the leasing of oyster beds and bottoms, are duties which devolve upon this Board. This report constitutes a summary of the activities of the Board during the past fiscal year.

The maintenance of this department does not cost the State one penny. The revenue derived through it has again this year been more than the appropriation granted it by the State. We ask you, therefore, not to look upon our appropriation as a grant coming from the people of the State, but rather from the revenues of the fishing industry. We also ask that you remember again this year, when we ask for an appropriation, that we have studied the situation from every aspect, and we desire only to serve our State and preserve the fishing and shellfish industries for the people of South Carolina. We, ourselves, have nothing to gain except the satisfaction of rendering a service to our State and to the fishing industry.

South Carolina has many rivers running out of its coastal line, and these rivers carrying fish food to the sea, should make our coast one of the best, if not the best, fishing ground on the Atlantic coast. We have many acres of natural oyster beds

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and bottoms and one of our greatest needs is a survey to determine the location of the natural beds of clams, oysters and scallops, as well as the location of suitable bottoms with proper water salinity for the cultivation of oysters.

The personnel of the Board has not changed since our last report. Mr. John H. Graham, of McClellanville, continues as Chairman, with Mr. C. L. Young, of Georgetown, and Dr. W. B. Ryan, Jr., of Beaufort, as the other two members. There have been changes, however, in the personnel of the department. On July 15, 1938, Mrs. Gene F. Withers, of Charleston, tendered her resignation as Secretary and Mr. Thomas C. Hartnett, of Charleston, was appointed by the Board as her successor. On July 1, 1938, Mr. J. Leroy Butler, Jr., of Beaufort, was appointed and commissioned as an additional district inspector for Beaufort County, as provided for under the terms of the general appropriation bill for the year 1938-39. On August 1, 1938, Mr. E. M. Bailey, of Edisto Island, was appointed and commissioned as district inspector for Charleston County.

The basic policy of the State of South Carolina regarding its fisheries resources is, in our opinion, wrong and has always been wrong. Our efforts at conservation and promulgation have necessarily at all times been seriously handicapped by the fact that South Carolina has adopted an entirely different attitude from the attitude prevailing in other states possessed of vast fisheries resources such as ours. While South Carolina has a coast line of approximately three hundred miles, there are only five of the forty-six counties bordering on the sea coast, with the result that the majority of the citizens and Legislators of our State, apparently never have realized the true value of our coastal resources. Ever since the day when people commenced to think of conservation of our natural resources and particularly our coastal resources, the attitude has prevailed in South Carolina that not one penny should be spent for the conservation and development of these resources that was not immediately paid in spot cash from the resources themselves.

While the duties of the State Board of Fisheries and its personnel are many and intricate under the law, our main purpose and real reason for being, is the conservation and development of our fisheries resources as an asset to all of the people of our State. Other states of the Union are far ahead of South

Carolina in the accomplishment of this purpose and objective, principally for the reason that they have been far sighted enough to spend a reasonable amount of money at the proper time, while South Carolina from year to year has taxed its fisheries industries and spent only a part of the revenue derived therefrom for conservation, regulation, development and promulgation. We feel that having followed a policy which is basically wrong and economically unsound, that South Carolina through the persistent efforts of the various officials and employees of the Board of Fisheries down through the years, under constantly handicapped financial conditions, is extremely fortunate in possessing the fishery resources which it does today.

In going through the records of the Board of Fisheries for many years past, we find that annually in their various reports to the General Assembly, an effort has been made to bring home to the Legislators of South Carolina the truth concerning our fisheries resources and industries, but apparently to little avail. This Board has done as preceding Boards have done, a great deal of constructive work with its limited means, but we may as well face the true fact that South Carolina will never go forward with the expansion of a fisheries program until South Carolina is willing to invest a reasonable sum of money for development. We sincerely hope that the time has arrived when the Legislators of South Carolina look upon the State as a whole and work for the welfare of the State as a whole, and if this is true, as we believe it is, they now realize the value of our coastal fisheries resources to the entire State and will be willing to do something about them.

There are many things for which additional funds could be used by this Board most advantageously, and we are not following out any precedent of asking for a large appropriation on the theory that our requests will be cut, as is so often believed to be the case. One of the things for which additional funds could be most advantageously used is to make the Chairmanship of the Board of Fisheries a full time job, and to show you that we have no selfish or ulterior motives in this statement, we are requesting that this change be made only at the expiration of the present term of office of the incumbent. We believe that a conscientious and sincere study of this report in its entirety, will

convince the reader that the size of our fisheries resources and industries and the many, many things which need yet to be done in our field, not only justify but require the full time attention of a capable and interested head. Among many other things for which additional funds could and should be used by South Carolina, are: additional hatcheries for re-stocking purposes to continue the upbuilding of our commercial fish supply; the reclaiming of hundreds of acres of natural oyster beds in this State which can and should be reclaimed, and which would eventually produce annually, many times the amount of money spent to rehabilitate them; the study, prevention, and where possible, the removal of stream pollutions; and last but by no means least, advertising of the magnificent quality of our seafoods as compared with those of other localities. It is noteworthy that one seafood producing state has been known to spend in a single year for advertising alone, more than twice the amount that South Carolina spent on the conservation, regulation and promulgation of its entire coastal fisheries resources. When South Carolina realizes that the fisheries industry is important enough to justify the investment of a reasonable sum of money, then and then only, can she take her rightful place among the other seafood producing states with a fisheries industry most profitable to its citizens and second to none in the United States.

All laws pertaining to the commercial fishing industry of South Carolina will be found in our small booklet published each year, entitled "Laws of the State of South Carolina—Pertaining to Migratory and Shellfish, Shad, Sturgeon, Oysters, Clams and Terrapin," copies of which are at all times available upon request.

SHAD

Statistics undoubtedly show that at the present rate of depletion, it will only be a matter of several years before South Carolina will no longer enjoy shad fishing. This extreme depletion has been noticeable for at least seventy years, over which period of time there has been a steady decline and which decline has become more and more acute in recent years. Some years ago, it was thought that the only thing needed to replenish the shad supply, was the operation of sufficient and efficient shad

hatcheries. Much work has been done along this line in South Carolina and undoubtedly this work has served to at least delay the extinction of the shad from our waters.

As pointed out in our last report to the General Assembly, Dr. R. A. Nesbit, of the United States Bureau of Fisheries, and his co-workers, as a result of the efforts of this Board, established offices in Charleston and are now engaged in making a scientific study of shad in an endeavor to find a means of increasing the supply. This study will take some time yet to complete and at the present writing we are not possessed of sufficient information to make any definite prognostication of the final outcome. Much study has been devoted to shad in years past and a great deal is known on this subject, but there are yet many important things about the habits and the life of the shad which we do not yet know and which we need to know in order to formulate a definite program for the replenishment of this seafood delicacy. However, the study being made by Dr. Nesbit and his assistants, of the shad depletion in our waters, has developed considerable information, which is now available, and we hope within the next few months to be able to secure sufficient information to put into operation a plan which may to some extent, prevent the continued depletion of shad in this State.

Pending more complete information, we are herewith making some suggestions, and we hope before the adjournment of the next session of the General Assembly to be able to present a more definite plan. One of the things which can be done to help in this emergency, is the enactment of a law establishing a uniform open season for shad fishing. We have recommended from year to year the changing of the shad season so as to have it close above the forty mile limit at the same time that it closes below the forty mile limit, and while we know that such a uniform seasonal limitation would undoubtedly result in the people above the forty mile limit catching very few shad at the present time, we believe that the people above the forty mile limit, where the shad go to spawn, would much rather do without shad from their local waters for a few years, than to see shad completely extinguished from our waters forever. We are taking this means of informing and warning the people above the forty mile limit, that unless they request their representa-

tives in the Legislature to consent to the uniform closing of the season on shad, it will only be, at best, five or six years in South Carolina before, in all probability, no one in South Carolina will have the opportunity of catching a single shad.

Another possible plan for the protection of our shad will be to put into effect the procedure used by the State of New York in the Hudson River for the establishment of shad sanctuaries with a continual closed season, or as a final resort, we would recommend that a closed season, with a maximum hatching of fry for a period of at least three years be put into operation, as we know that unless something drastic is done it will not be long before South Carolina's shad supply will be completely eliminated.

The enactment of the law passed by the last General Assembly requiring all shad offered for sale in South Carolina to be stamped with South Carolina impost tax tags, regardless of their source, has done much good in that it has not only put our shad fishermen on a fair and equal competitive basis with fishermen from other states but has caused the shad dealers in the interior of our State to become interested in and realize the importance of South Carolina shad. We are hopeful that State wide interest in our shad supply will help to bring about a greater protection and replenishment of our shad supply.

Relative to the shad operations at the hatchery located at Jacksonboro, we quote from the report of Mr. P. G. Carnes, Superintendent of the Orangeburg Station, as made to the Commissioner of the United States Bureau of Fisheries, Washington, D. C., on May 20, 1938:

"Shad operations on the Edisto River and the Black River were brought to a close during the month. The Edisto hatchery collected 1,204,500 eggs, which produced 915,935 fry. The Black River and Pee Dee River were canvassed for eggs from April 20 to May 7, but practically none of the few fish caught were in spawning condition and the small quantity of eggs taken were inferior in quality and failed to produce fry."

Mr. Carnes further states in his letter to us that while these figures are considerably below some of our better seasons at Jacksonboro, it does represent a substantial increase in production over the past several years. The fry were planted in the

Edisto and Ashepoo Rivers and experimental rearing ponds at the Orangeburg Station.

OYSTERS

The oyster industry is one of the most important of our fisheries industries, not only in volume but in food value and delectability of the product. These bivalves are found along practically the entire Atlantic and Gulf coasts, with the exception of Maine and New Hampshire, where very few are found now. Oysters do not grow in the open sea, but in the creeks, coves, bays, estuaries and mouths of rivers. The oyster thrives only in partially enclosed waters rendered slightly brackish by drainage from the land. It has been repeatedly pointed out and is now a fairly well known fact that oysters are one of the most healthful foods available to the populace of our nation. Scientific tests have shown South Carolina oysters to contain iron, copper, iodine and an abundance of vitamins A, B, C and D.

"The Jacksonville Journal recently introduced to this section of the country something new in oysters, that newspaper dwelling upon the attractions to the palate of the smoked oyster. It had been thought the very numerous ways of serving this popular article of food, as many perhaps as the egg may boast, were at their peak numerically. Such is not the case. The smoked oyster is at hand.

Recently this new delicacy made its appearance in Tacoma and Seattle, thus giving to the Northwest what glory there may be in adding something to the nation's menu. The world has long been familiar with smoked meats and smoked fish and likes them. According to a report from Washington State, the people of that section have accorded the smoked oyster a hearty reception. Cured in the fumes of crab apple wood, oysters thus treated are said to be of most pleasing flavor. They are expertly smoked and canned, a thousand cases recently being put on the market to meet a quick sale. The suggestion has been made that South Atlantic oysters, of fine flavor and consumed with relish however served, might lend themselves readily to smoking. If Northwestern oysters are delicious thus cured, no doubt South Atlantic oysters would be more delicious."

Climatic and water conditions in South Carolina do not permit the growth of oysters of as large a size, on an average, as

those grown in certain other states, but on the other hand, regardless of size, our oysters have a much finer flavor and according to scientific tests, rank among the best in the world as to food value or nutritional content. Were this fact generally known, it would enable our oyster industry to compete most successfully with all other oyster producing regions, in spite of the fact that our oysters are somewhat smaller.

A very interesting article expressing another opinion, as to the cause of the smaller size of the South Carolina oyster, is reproduced below:

(Reprinted from Science, April 2, 1938, Vol. 87, No. 2260, page 367.)

"The American Indian, who, prior to the sixteenth century, inhabited that area which is now the coastal region of Charleston County, South Carolina, made extensive use of *Ostrea virginica* as food. This is attested by the large number of Indian shell heaps found throughout the area. Any one familiar with the present-day oyster industry examining these shell piles immediately realizes that the size and evident quality of these pre-colonial oysters far surpassed those gathered today.

"On the west bank of the Ashley River, about eight miles above Charleston, S. C., there is a large shell heap containing over 3,200 bushels of oyster shells. The geographic location of this shell pile is such that the oysters therein must have come from the nearby river. Practically all the oyster shells in this mound are over 3.50 inches from hinge to bill. Today the Ashley River produces no oysters commercially, and even experimentally it is doubtful if any oysters could be gathered which would compare favorably with those from the Indian shell heap. Of course, the Ashley River is and has been for some years heavily polluted with sewage and mill waste. This pollution may have been the cause of the decrease in the size of the oysters of today.

"In order to compare the size of pre-colonial oysters with present-day oysters in areas not affected by pollution, shells were collected from a large Indian shell heap on the edge of Sewee Bay, Charleston County, S. C. These shells came from oysters quite evidently gathered in the vicinity of Sewee Bay, which is far removed from any source of pollution. The largest individual oyster shell in this collection measured 8.00 inches long

and 2.75 inches wide. Of 10 specimens selected as being the largest, the average length was 6.54 inches, with an average width of 2.56 inches. The average measurements of all specimens (50) were 4.29 inches by 2.51 inches.

"From the same general locality, 290 live oysters were gathered from 15 different commercial beds. One hundred and forty of these specimens were chosen for their size, that is, the beds were carefully examined and these 140 individuals were selected as being the largest. The largest oyster in this group was 4.75 inches by 2.25 inches. The average of the group was 3.91 inches by 1.93 inches. In addition to this group, 150 oysters were gathered at random from the same beds. These were considered as being fairly representative of the oysters which could be gathered by commercial oystermen from this particular section of South Carolina. This group averaged 2.67 inches in length by 1.76 inches in width.

From these comparative measurements, the selected pre-colonial oysters were found to be 58.78 per cent. longer and 75.39 per cent. wider than selected present-day oysters. The ordinary pre-colonial oysters were found to be 62.23 per cent. longer and 76.89 per cent. wider than the ordinary present-day oysters, all of which were gathered in the vicinity of Sewee Bay.

These observations probably do not indicate that *Ostrea virginica* has become a smaller species in the past four hundred years. In all probability the small size of the present-day oyster is due entirely to intensive commercial fishing which does not allow it to reach its maximum growth."

G. ROBERT LUNZ, JR.,
Charleston Museum.

We have mentioned before, that other states have appropriated substantial sums of money for advertising purposes and we feel that one of the vital needs of the oyster industry in South Carolina is advertising to acquaint the public at large of the true value of our product.

During the past season twenty-seven shucking sheds and four oyster canneries operated within the State, under sanitary regulations of the State Board of Fisheries and under the supervision of the State Board of Health. These shucking sheds

and canning plants marketed 39,097 gallons of raw oysters and canned 20,350,198 oz. of oysters. All of these oysters were marketed under highly sanitary conditions and provided to the consumers who purchased them, a real treat in seafood of the most delightful flavor and high nutritional content.

In past reports to the General Assembly, we have suggested two plans of financing the restoration and development of oyster lands of our State and the advertising of our products without cost to the tax payers of this State. One of these plans involved a self-liquidating bond issue and the other plan provided that the tax paid on gasoline and all other petroleum products used by boats, be expended for fisheries purposes. We still feel that either of these plans is economically sound and fair and for this reason we are quoting them verbatim from our last annual report.

"There are thousands of available acres where oysters can be planted successfully and profitably to the State and its citizens and the Board respectfully recommends that they be authorized to issue bonds in the amount of \$40,000.00, both principal and interest to be payable from the revenue received from the taxes on oysters, both canned and raw, the bonds to mature in twenty years. With this amount of money we are certain that we can restore the oyster beds that we formerly had, induce canneries to locate in our State and bring South Carolina to the front as an oyster producing State, thus affording greater revenue to the State and income to its citizens.

"As a further source of revenue, we would recommend that the tax now paid on gasoline and other petroleum products used by boats, be turned over to the State Board of Fisheries for the purpose of restocking our oyster bottoms and shores, instead of being used to build highways. This seems to be a fair proposition in that the fisherman uses the creeks, bays, sounds, shores and bottoms from which he derives his livelihood, and the taxes he pays on his fuel should be expended to improve his source of livelihood, just as we improve the highways for the trucks and automobiles with the taxes on the gasoline used on the highways. If this latter recommendation is accepted, there will be no need for the bond issue, as we feel sure that the taxes from gasoline and other petroleum products used by boats over a

period of years will amply supply the funds necessary for the work so needed in the development of our fisheries resources.

"You will note, however, that by stretching the maturity of the bonds over a period of twenty years, the bond issue will not cost the State of South Carolina any money and a great progressive step will be paid for by that progress itself in the taxes collected on the increased output of oysters. We feel, that by using either of these methods, we can take advantage of a real opportunity to restore a great natural resource and build for the future of our State without cost to the taxpayers."

We hope that the General Assembly this year will see fit to adopt and put into effect one of these plans so that we may go forward with the promotion of a truly great industry in our State.

SHRIMP

The shrimp industry in South Carolina is one of the most important of our fisheries industries, not only from a standpoint of revenue to the State, but from the fact that thousands of dollars are invested in this industry and the turnover for food supplies, repairs, gasoline, oil and labor, amounts to a very substantial sum of money. This industry brings annually to the merchants and laboring people of the coastal counties of South Carolina thousands of dollars and is, therefore, an industry which should be constantly encouraged and promoted.

A great deal is not known about the habits of the shrimp but they are believed to spawn in the open waters of the ocean during the spring and summer each year. The extended breeding season and the large number of eggs produced are factors favorable to the adequate production of a crop of shrimp, and render almost impossible the failure of an entire season. The shrimp is believed to be an annual, being spawned one year, spawning at the same season of the next year, and then passing out of the fishery.

Since we do not know very much about the habits of the shrimp, we are in position to do very little about increasing the supply or avoiding depletion, and one of the most constant problems we have in connection with the shrimp industry is to keep the shrimp trawlers, due to the nature of their operations, from damaging and depleting other fisheries resources. Most

of the laws regulating the shrimp industry are on the statute books for the purpose of preventing the shrimp trawlers from injuring other commercial fish and to keep them from depleting the supply of game fish for sportsmen.

During the past season we had some complaints made against shrimp boats trawling within prohibited waters or marine sanctuaries, but not nearly as many as we have had in former years. It has been a constant effort of the Board to stop these violations of the law and to this end we have prosecuted all violators and collected fines in practically all instances. We believe that the people engaged in the shrimp business are now very well acquainted with the laws regulating the industry and the limits of forbidden territories, with the result that the law is being much more generally observed. We firmly believe that with a few minor corrections in the statutes governing the shrimp industry and with a continued effort on the part of the inspectors to educate the shrimp fishermen regarding observance of the law and conservation of the shrimp and other fisheries resources, we will soon have no violators and all of the shrimp dealers cooperating to the fullest extent for protection of their own businesses.

During the past season 171 shrimp boats operated in South Carolina waters. Shrimp caught by these boats totaled 2,956,014 pounds. The entire catch was marketed raw, no cannery having operated. The shrimp industry paid a net revenue to the State in impost tax licenses and stamps this year of \$4,317.86.

CLAMS

The clam industry of South Carolina has for years centered mostly in the counties of Georgetown and Horry. This industry has been on a gradual down-grade for a number of years and on June 10, 1937, the Board of Fisheries passed the following resolution:

"The taking and removing of clams from any of the shores of Georgetown County for shipping out of the County of Georgetown or the State of South Carolina, is hereby prohibited for a period of two (2) years from June 10, 1937."

The small quantity of clams marketed during the past season consequently came from Horry County.

STURGEON

Forty or fifty years ago sturgeon were very abundant in coastal South Carolina streams but from year to year the supply has become more and more depleted, so that in recent years there have been few sturgeon marketed and practically no caviar from its roe. Consequently, after due investigation by the United States Bureau of Fisheries, the General Assembly of South Carolina in 1937 passed a law closing the sturgeon season for a period of three years. We believed at the time that this closed season would do a great deal toward replenishing the supply of sturgeon, but because of the fact that the law worked something of a hardship on parties having money invested in sturgeon fishing equipment, the 1938 session of the Legislature passed a resolution holding up the enforcement of the 1937 statute.

In accordance with this resolution, the Board of Fisheries did not enforce the closed season on sturgeon during the past year. We earnestly urge, however, that the 1937 statute be retained on the books and it is the purpose and intention of this Board to strictly enforce the closed season during the coming year unless the statute is repealed.

We realize that the closed season will work something of a hardship on fishermen who have their money tied up in sturgeon fishing equipment, but a more important consideration is the future supply of sturgeon rather than the temporary effect of the law upon a few individuals, and we are fully convinced that unless some measures are adopted to protect the sturgeon they will soon be extinct in our waters.

OYSTER LAND AND LEASES OF SAME

As set forth in a former report to the General Assembly, all leases of oyster lands executed by the Board, in accordance with the law, provide for a flat yearly rental of \$1.00 per acre for a five year term, with the operator having the privilege over other applicants of renewing his lease at the end of the five year period. All leases are drawn in duplicate with blue prints attached, and the original is handed to the lessee for recording in his county, while the copy is retained in our office. In this way it is possible to keep a concise and clear record of all leases issued.

There is a considerable difference of opinion among people interested in the oyster industry as to whether leases granted should cover only the area suitable for immediate oyster production, or additional acreage of the surrounding territory, with the idea that the leasing of the additional area would enable the lessee better to protect his oysters and at the same time encourage him to develop the entire acreage included in his lease. With this in mind we are strongly recommending that an appropriation be made for the survey of our entire coast so that we may ascertain every available acre of oyster shores and bottoms that may be leased by the State and have a complete map or plat of the shores and bottoms leased at present set forth in such a concise manner that our Board members and inspectors may be in possession of adequate information as to available shores or bottoms for lease. It is very difficult to realize for the State the full value and benefit of our oyster shores and bottoms when we have on file only a series of disjointed and disconnected maps, rather than a complete and accurate map of our entire coast line. We feel that by such a survey, the State will reap a larger revenue from rentals and at the same time this Board will be in a much better position to promote the oyster industry on a truly profitable scale for the citizens of South Carolina.

TERRAPIN

In 1933 this department received a shipment of diamond back terrapin from the United States Biological Station at Beaufort, North Carolina, for distribution in the waters of South Carolina. Since that time, we have each year received a shipment of these young terrapin in varying amounts. This year, on May 3, the Board received a shipment of 2,500 and these young terrapin were immediately planted as follows:

- 500 in Wagner Creek, Charleston County.
- 500 in Awendaw Creek, Charleston County.
- 500 in Chowan Creek, Beaufort County.
- 500 in Tom Fripp Creek, Beaufort County.
- 250 in Village Creek, Beaufort County.
- 250 in Station Creek, Beaufort County.

We believe that the terrapin industry is back to stay as a progressive and increasing industry, and unquestionably the efforts

of the Board in the promulgation of this fine coastal South Carolina resource will result in even greater benefits to the people of the State in the years to come, than they are now reaping therefrom.

MENHADEN

The menhaden is not generally considered an edible fish. There are two basic uses for the menhaden fish carcass—fertilizer and feed. For either purpose, fish stands at the head of the class and commands a premium over other material. The menhaden oil is used in the manufacture of soap, paint, varnish, linoleum, oil cloth, waterproof fabrics, fuel for miners' lamps and rubber substitutes. It is also used in the tempering of steel, rug manufacturing and as a substitute for cod liver oil. This oil is being further purified and refined, mixed with cottonseed oil, and sold as an edible cooking fat.

The menhaden season is generally of short duration, lasting only a few months, and then the catch depends on the weather. The fish are caught at sea and at the season of the year when the weather is least dependable. Menhaden are migratory and they pass the North Carolina and South Carolina coasts during the fall season on their way south.

South Carolina has no menhaden fishermen nor have we a factory for the handling of menhaden fish at present, but the operators from North Carolina continue to follow the fish on into the waters along our shores. They brought to the State during the past year, a revenue of \$1,257.00 through the purchase of licenses, as compared with a revenue of \$1,002.00 during the previous year.

CRABS

The crab industry of South Carolina is, in our opinion, here to stay. Crabs have always been numerous along our shores but they received practically no commercial attention until a very few years ago. The sea, however, produces no finer delicacy than tender white crab meat or a properly prepared soft shell crab, and more and more people are becoming acquainted with this fact each year.

On June 24, 1937, members of the Board of Fisheries conferred with representatives of the crab industry in South Carolina to discuss protective measures for the female crab. At that time, some of the packers agreed not to buy the small female crabs and others agreed to cut the price on the small ones to the catchers to such an extent that it would not be profitable for the fishermen to bring them in. They also favored the imposition of licenses on crab fishermen.

During the 1938 session of the General Assembly of South Carolina, an Act was passed as follows:

"It shall be unlawful for any person to catch, hold, have in his or her possession, or offer for sale any female crab bearing eggs visible thereon or any female crab from which the egg pouch or bunion has been removed.

"That nothing in this Act shall be construed to make it unlawful to catch such crabs unintentionally, *Provided*, the same are forthwith, while still alive, returned to the water.

"Any person violating the provisions of this Act shall be guilty of a misdemeanor and, upon conviction, be punished by a fine of not less than Ten (\$10.00) Dollars and not more than One Hundred (\$100.00) Dollars, or imprisonment for not less than ten (10) days and not more than thirty (30) days, within the discretion of the Court."

An Act was also passed during this session to amend Section 3376 of the Code of Laws of South Carolina of 1932, reducing the fee for crab fishing licenses from \$5.00 to \$1.50. This license fee is required of each person who catches or takes crabs from the waters of South Carolina for commercial purposes.

POLLUTION OF WATERS

Pollution to some extent has always been present in the river waters along the coast of our State but it has only been in the last few years that the situation has become a serious problem. Growing towns and cities, with their sewage systems, have done and will continue to do a certain amount of damage to the marine life in our rivers, bays, creeks, etc., but such damage, we feel sure, has been minimized to every possible extent. During the past two years, however, large mills have located in our State and it is a fact that since these mills began to operate,

marine life in certain of our rivers has been most strongly affected.

Pollution is an acute matter and we are more than ever convinced that a commission should be appointed or elected by the General Assembly for the purpose of studying the pollution of the waters of South Carolina. We feel that by doing this now, we may be in position to properly protect the marine life of our waters prior to the establishment of a still greater number of industries locating in our State, which would undoubtedly tend to increase the problems of pollution. We also feel that by giving this matter serious consideration at this time, a study of the subject will no doubt be of great help to the new industries of the future, in enabling them to assist us in our efforts to hold the pollution of our many streams down to a minimum.

BOATS

The following is a list of the boats owned by this department and operated for patrol purposes:

One Chris Craft run-about, 27 ft. long, 250 HP Kermath Motor.

One Thompson boat, 16 ft. long, (poor condition).

One Mahogany boat, 16 ft. long, 24 HP Johnson Motor.

One Cabin Cruiser, 48 ft. long, 65 HP Lathrop Engine.

One Cabin Cruiser, 27 ft. long, 50 HP Red Wing Engine.

One Cabin Cruiser, 39 ft. long, 40 HP Lathrop Engine.

One Cabin Cruiser, 26 ft. long, 40 HP Gray Engine.

One Gibbs Power Sea Skiff, 14 ft. long, 4 cycle Briggs & Stratton Motor.

The last boat listed above was purchased recently for the Horry County district and is now in excellent condition.

REQUESTS

1. We request that the General Assembly pass an Act changing the open season on shad fishing from January 15 to March 25, to from February 1 to March 25, and that this Act be made to apply to the entire State. This would mean that the closed season on shad fish would be effective in all of the waters of South Carolina at the same time and would greatly simplify

the enforcement of the law, as well as allowing shad to spawn properly in our streams.

2. That the Board of Fisheries be given the power to employ all District or Assistant Inspectors and to dismiss them when their services are not necessary. It is impossible to obtain the maximum efficiency from men whom you have no power to discharge for non-performance of duty.

3. That the Chairmanship of the Board of Fisheries be made a full time job, effective at the expiration of the term of office of the present incumbent, as it has been observed that where the Chairman devotes only part time to the department, many matters that would most probably prove profitable to the State in revenue and resources are necessarily neglected. We feel that if this department is to rank with other states in commercial fisheries, the Chairman should be constantly in contact with any and all movements pertaining to commercial fisheries throughout the United States. We feel that should this change in the present system be made, much revenue can be created and collected for the State, as well as the marine resources developed to their fullest extent, giving additional employment to many people.

4. That an appropriation be provided for the employment of a file and/or record clerk for this department. This Board has constantly expanded its activities over a period of years, with the result that the records on file have increased, book-keeping has grown more complicated and the general office work has also increased. The importance of the accuracy of the records held in this office and the necessity of their immediate availability cannot be overemphasized. For some years past, more and more work has been delegated to the Secretary, with the result that at the present time there are entirely too many duties imposed upon the person holding this position. Therefore, in order that the records of this department be properly filed, preserved and accurately kept, we feel that it is of the utmost importance to the continued growth and expansion of the activities and accomplishments of this department that an experienced, informed and interested person be employed to assist the Secretary. We, therefore, recommend that an additional \$1,200.00 per year be appropriated for such position and

that the said position be filled through the same procedure as are the positions of secretary and chief inspector.

5. That the price of the Swimming Fish license for residents of South Carolina remain at \$2.50, but that this law be amended so as to provide for a \$5.00 license fee for non-residents. The Swimming Fish license allows the person purchasing same to fish for market for all salt water fish, with the exception of sturgeon.

6. That the license for non-resident shrimp boats be increased from \$5.00 to \$10.00. That the license for shrimp nets used on non-resident shrimp boats be increased from \$5.00 to \$10.00. That the resident shrimp boat licenses remain at \$5.00. That the license for shrimp nets used on resident shrimp boats remain at \$5.00.

7. We renew and urgently recommend that a tax of five (5c) cents per gallon be imposed on all raw oysters sold in South Carolina, and a tax of two (2c) cents on each sixty (60) ounces of canned oysters sold in South Carolina. These are the present taxes on South Carolina oysters and it is only fair to South Carolina producers that it be passed, so as to bear equally on imported oysters.

8. The present law requires that shad sets be placed not closer than two hundred (200) yards apart. We ask that this be changed so as to prohibit sets being placed closer together than four hundred (400) yards.

9. That an Act be passed increasing the following licenses:

Shrimp Cannners' License	from \$1.00 to \$5.00
Raw Oyster-in-Shell Shippers' License....	from \$1.00 to \$5.00
Raw Oyster Shucking Shed License.....	from \$1.00 to \$5.00
Oyster Cannners' License.....	from \$1.00 to \$5.00
Clam Cannners' License.....	from \$1.00 to \$5.00

10. That a law be passed authorizing the State Board of Fisheries to issue a General Cannners' License, the price of which would be \$25.00 per annum.

11. That an Act be passed placing a license of \$4.50 on each Barge or Lighter, used in gathering oysters, of less than five (5) tons. That a license of \$15.00 be placed on each Barge or Lighter, used in gathering oysters, of five (5) tons and over.

12. That an Act be passed licensing Dredges carrying less than 600 bushels of oysters, said license to be \$20.00. That on Dredges carrying 600 bushels or more, a license of \$25.00 be required. We ask further that a penalty for violation of this Act be provided.

13. We ask that a law be passed requiring a license on all Drag or Haul seines, as follows:

On all Drag or Haul seines up to and including 100 yards, the sum of \$2.50; on all Drag or Haul seines of a length over 100 yards and not over 200 yards, \$7.50; and on all Drag or Haul seines of a length exceeding 200 yards, the sum of \$7.50, plus the sum of \$10.00 for each 100 yards or fractional portion of 100 yards, in excess of the first 200 yards.

We ask further, that for any violation of this Act, a penalty of not less than \$50.00 fine or thirty days' imprisonment be imposed.

14. That the Board of Fisheries be allowed to retain and use for its operation and for the conservation and propagation of the various fisheries industries, the revenue obtained through it. This would be in line with the policy now in force for the operation of the State Game Department, etc.

15. We recommend that 1936 Act No. 714, as amended by 1937 Act No. 243, Providing For and Requiring Boats Licensed to Trawl for Shrimp to Carry Registration Numbers, be repealed, as we find that it is impossible to enforce same for the reason that the size of the numbers required are too large for the space on cabins and it would be useless to put the numbers on the decks of the said boats.

All of which is respectfully submitted.

JOHN H. GRAHAM, Chairman
C. L. YOUNG
W. B. RYAN, Jr., M. D.

Attest:

THOMAS C. HARTNETT, Secretary,
Charleston, S. C., June 30, 1938.

Appropriation for 12 months, July 1, 1937- June 30, 1938.....	\$23,775.00
Amount of Appropriation spent during this period	\$23,734.49
Amount of Appropriation not used.....	40.51
	<hr/>
	\$23,775.00
Receipts: July 1, 1937-June 30, 1938.....	\$25,464.54
Receipts	\$25,464.54
Money spent	23,734.49
	<hr/>
Net profit	\$ 1,730.05

	1936-37	1937-38
Shrimp caught (lbs.).....	3,723,244	2,956,014
Shrimp headed (lbs.).....	2,117,245	1,752,615
Oysters gathered in shell (bus.).....	640,690	605,698
Oysters shucked raw (gals.).....	42,562	39,097
Oysters canned (ozs.).....	23,529,907	20,350,198
Shad caught (white).....	17,784	10,693
Shad caught (hickory).....	2,768	2,988
Terrapin caught	1,804	2,302
Terrapin shipped	1,444	1,158
Oyster shell planted (bus.).....	673,176	619,251
Seed Oysters planted (bus.).....	36,329	31,072
Sturgeon caught	759	668
Oyster land under lease (acres).....	4,358.16	4,708.18
Clams sold (bus.).....	1,254	73
Crab meat sold (gals.).....	20,893	12,655
Soft shell crabs sold (doz.)	1,893	2,505
Hard crabs sold (bus.).....	39	4,277